Total No. of Questions: 3

Enrollment No....EN2.2CS.301.481

Faculty of Engineering

Mid Sem I Examination March -2023

EN3ES17 Basic Electrical Engineering

Programme: B.Tech. Branch/Specialisation: All

Duration: 1.5 Hrs. **Maximum Marks: 30**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	CO	PO	PSO
Q.1	i.	What is the source transformation of a practical voltage source? (a) Current source in series with a resistor (b) Current source in parallel with a resistor (c) Voltage source in parallel with a resistor (d) Cannot be modified	1	BL_{01}	CO_{01}	PO_{02}	
	ii.	A circuit contains two unequal resistances in parallel? (a) current is same in both (b) large current flows in larger resistor (c) potential difference across each is same (d) None of these	1	BL_{01}	CO_{01}	PO_{02}	
	iii.	If a 6 ohm, 2ohm and 4ohm resistor is connected in delta, find the equivalent star connection? (a) 1ohm, 2ohm, 3ohm (b) 2ohm, 4ohm, 7ohm (c) 5ohm, 4ohm, 2ohm (d) 1ohm, 2ohm,2/3ohm	1	BL_{02}	CO_{01}	PO_{02}	
	iv.	Active power consumed by purely inductive circuit is? (a) Zero (b)Infinite (c) 1 Watts (d) None of these	1	BL_{01}	CO_{02}	PO_{01}	

v. Power factor of purely resistive circuit is?

(a) One (unity) (b) zero lagging

(c) zero leading (d) None of these

1 BL_{01} CO_{02} PO_{01}

vi. A sine wave of a voltage varies from zero to maximum of 100 V. How much is the voltage at the instant of 180 degree of the cycle?

(a) 0 V (b) 82.8 V

(c) 100 V (d) 173.2 V

1 BL_{02} CO_{02} PO_{01}

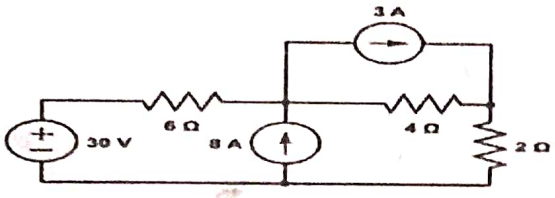
Q.2 i. Explain KCL and KVL with an example?

3 BL_{02} CO_{01} PO_{02}

ii. Define ideal and practical voltage and current source?

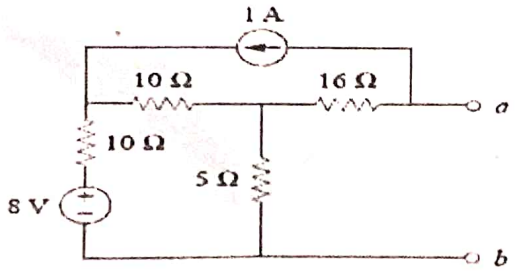
4 BL_{02} CO_{01} PO_{01}

iii. By nodal analysis determine current flowing through 4ohm resistor? Also calculate power consumed by 4ohm resistor.



5 BL_{03} CO_{01} PO_{01}

OR iv. Find the Thevenin equivalent of the circuit at terminals a-b?



5 BL_{03} CO_{01} PO_{01}

Q.3 i. Define active, reactive and apparent power in an A.C circuit?

3 BL_{02} CO_{02} PO_{01}

ii. Explain resonance for a series RLC circuit with phasor diagram?

4 BL_{02} CO_{02} PO_{01}

iii. A series RLC circuit has the following parameter values: R = 10 ohm, L= 0.01 H, C = 100 μF if supply voltage is 220V rms?

5 BL_{03} CO_{02} PO_{01}

(a) Compute the resonant frequency
(b) Calculate the quality factor of the circuit
(c) Peak current at resonance
(d) Voltage drop across capacitor at resonance
(e) Voltage drop across inductor at resonance

OR iv. In an ac circuit the voltage across and current through the circuit are given by v (t) = 250 sin(314t - 45) and i(t)=100sin(314t +15), then find (a) Power factor of circuit (b) Active power (c) Impedance of the circuit (d) Apparent power (e) Reactive power 5 BL_{03}

****